

**Notice of Allowability**

Application No.

10/614,821

Applicant(s)

AKAMIZU ET AL.

Examiner

Deborah Yee

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to applicant's amendment and remarks dated July 19, 2005.
2. ☒ The allowed claim(s) is/are 1 to 3 and 5 to 7.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 7-19-05, 4-19-06 ~~3-19-05~~
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material  
4/19/05
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

Deborah Yee  
Primary Examiner  
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***Allowable Subject Matter***

1. Claims 1 to 3 and 5 to 7 are allowed.
2. The following is an examiner's statement of reasons for allowance: The art of record does not teach or fairly suggest the steel sheet with the microstructural requirement ( 2 ) or ( 4 ) and its process of making, as claimed. Although the prior art discloses alloys which meet the claimed composition and the claimed ferrite-martensite-residual austenite microstructure, they fail to teach or recognize the critical requirement (2 ) and ( 4 ) recited by claims 1 and 2, respectively that are necessary to achieve a good balance of high tensile strength and ductility (especially local elongation ) and low yield ratio. Moreover, the claimed requirements would not be inherent in the prior art alloys since they are process-dependent as evident by figure 2 and comparative test data in table 2 of applicant's specification; and prior art does not teach or fairly suggest the process of making for the present invention comprising the steps of subjecting a steel slab to solution treatment at 1,270C or higher for 5 hours or more, hot rolling the slab into a steel sheet, and austempering by cooling the steel sheet to the bainite transformation range and maintaining the steel sheet within that temperature range for 50 to 200 seconds.
3. Moreover, the prior art does not teach or fairly suggest the concept of the present invention wherein applicant has discovered that steel ductility improvement is achieved by enhancing the stability of residual austenite by having residual austenite present mainly within the ferrite grain rather than at the ferrite grain boundary; hence the

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claimed requirement (2) wherein the ratio of area fraction of residual austenite within the ferrite particle to the volume fraction of residual austenite equals 0.65 or more is critical and productive of new and unexpected results. Moreover, it was discovered that improved ductility and uniformity of residual austenite is achieved by decreasing the C content in the residual austenite to 0.95 to 1.15% which is claimed requirement (4). As stated in applicant's specification on page 11, conventional TRIP steel sheet has an average C content in residual austenite at about 1.2 to 1.3% which is a relatively high value that promotes residual austenite having large differences in C concentration distribution, particularly large carbon quantities in the ferrite grain boundary.

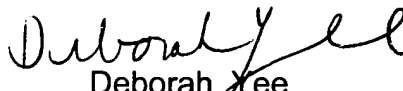
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on Monday-Friday from 6:00 to 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Deborah Yee  
Primary Examiner  
Art Unit 1742

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